The SEEA Experimental Ecosystem Accounting Framework

Scoping workshop on business accounting, 16-17 October

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Overview

• What is Natural Capital Accounting and the SEEA?
• The SEEA Experimental Ecosystem Accounting Framework
  > Examples from the European Union
• Linking private and public sector natural capital accounting approaches
WHAT IS NATURAL CAPITAL ACCOUNTING AND THE SEEA
Limitations of Traditional Accounts

National accounts do not cost depletion or degradation.

Narrow view of environment -> only asset when owned and yielding benefits

Do not capture all economic contributions of nature (e.g. regulating services)

-> Decision makers don’t have key information necessary to effectively pursue and track sustainable development.

-> Need for SEEA / NCA!
System of Environmental-Economic Accounting (SEEA)

SEEA as the measurement framework for natural capital accounting
- Work started in late 1980s
- Rio 1992 / Agenda 21 -> recognized the need for satellite accounts
- The SEEA Central Framework was adopted as an international statistical standard by the UN Statistical Commission in 2012
- The SEEA Experimental Ecosystem Accounting complements the Central Framework and represents international efforts toward coherent ecosystem accounting
# SEEA accounts

<table>
<thead>
<tr>
<th>SEEA-EEA (Experimental Ecosystem Accounting)</th>
<th>Adds spatial detail and ecosystem perspective</th>
<th>Extent, Condition, Ecosystem Services, Thematic: Carbon, Water, Biodiversity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEEA-CF</strong> (Central Framework)</td>
<td>• Assets</td>
<td>• Minerals &amp; Energy, Land, Timber, Soil, Water, Aquatic, Other Biological</td>
</tr>
<tr>
<td></td>
<td>• Physical flows</td>
<td>• Materials, Energy, Water, Emissions, Effluents, Wastes</td>
</tr>
<tr>
<td></td>
<td>• Monetary flows</td>
<td>• Protection expenditures, taxes &amp; subsidies</td>
</tr>
</tbody>
</table>
| **SEEA Water; SEEA Energy; SEEA Agriculture, Forestry and Fisheries** | Adds sector detail | Asset and flow accounts for  
|                                             |                                             | • Water  
|                                             |                                             | • Energy  
|                                             |                                             | • Agricultural, Forestry and Fisheries  |
Example (Norway): Output and GHG emissions by industry

Figure 3. Greenhouse gas emissions (CO₂-equivalents) and output (fixed 2005-prices) divided according to industries and share of totals. 2012

- Agriculture, forestry and fishing
- Oil and gas extraction
- Manufacturing
- Energy and water supply, sewage and waste management
- Transport incl. ocean transport and international air transport
- Services and remaining industries not elsewhere included

1 Services, energy and water supply and construction, education, health and social work and general government administration.
Source: Statistics Norway.
Biodiversity Finance in Mexico

In 2015, public expenditure in biodiversity represented 0.1% of GDP.

The biodiversity expenditure has increased 248% from 2006 to 2015.

Expenditure in 2015:
- Ministry of Environment and Natural Resources: 62%
- Other sectors: 38%

In the period of 2006 to 2015, biodiversity expenditure increased 18%.

Biodiversity Expenditure that Potentially Contributed to the Agendas of SDGs 14 and 15 in 2015

- USD $425.5 million USD $1,169.8 million
- 14 Life below water: $93.2 million USD
- 15 Life on land: $649.2 million USD

Finance Needs Beyond the NBSAP

The total Cost of Environmental Degradation and Resource Depletion (CEDRD) in 2015 was USD $52.8 billion.

- USD $11.6 billion
- USD $41.2 billion
From data silos to integrated information
Benefits of an Accounting Framework for the Environment

• Presents environmental and economic information together in a consistent way
• Allows for environmental data to be integrated with existing System of National Accounts measures
• Provides:
  o International comparability
  o Broad credibility
  o Replicability
• *Transforms data into information*
SEEA EXPERIMENTAL ECOSYSTEM ACCOUNTING FRAMEWORK
SEEA EEA Conceptual Framework

Environment

Ecosystem assets
- Ecosystem *extent*
- Ecosystem *condition*

Final Ecosystem Services

Society

Economy

Benefits

Individual and societal well-being
Core accounts + connections with the SNA

- Physical accounts
- Monetary accounts
- Integrated accounts

Stocks accounts
- Ecosystem extent
- Ecosystem condition

Flow accounts
- Ecosystem services supply and use
- Ecosystem services supply and use

Integrated balance sheets & Wealth accounts
- Extended Supply-Use & Input-Output
- Degradation adjusted sequence of accounts

Ecosystem asset account
EXAMPLES
ECOSYSTEM ACCOUNTING IN EU
Ecosystem extent account - EU

- RESULTS –

EEA: Net changes in ecosystem extent inside and outside of Natura 2000 (=protected) areas, 2000-2012

![Graph showing net changes in ecosystem extent inside and outside of Natura 2000 areas (2000-2012)]


Ecosystem condition account - EU
Assessing ES
Crop pollination

Pollination potential

Pollination demand

Environmental suitability

- High (>0.3)
- Medium (0.2-0.3)
- Low (0.1-0.2)
- None (<0.1)
- Non EU territories

Pollination potential in 2012

Pollination demand in 2008

EC-JRC 2019
Crop pollination

Use area (overlap)

Benefit: yield attributable to wild insect pollinators
Crop pollination

Useful for the integrated narratives

IPBES: “decline of wild pollinators in North West Europe”
## Supply table for the EU

### Ecosystem service

<table>
<thead>
<tr>
<th>Ecosystem type</th>
<th>Total</th>
<th>Urban</th>
<th>Cropland</th>
<th>Grassland</th>
<th>Heathland and shrub</th>
<th>Woodland and forest</th>
<th>Sparsely vegetated land</th>
<th>Wetlands</th>
<th>Rivers and lakes</th>
<th>Coastal and intertidal areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crop provision</strong></td>
<td>20,560</td>
<td>20,560</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Timber provision</strong></td>
<td>14,540</td>
<td></td>
<td>14,540</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Global climate regulation</strong></td>
<td>14,390</td>
<td>20</td>
<td>150</td>
<td>850</td>
<td>20</td>
<td>13,330</td>
<td>20</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Flood control</strong></td>
<td>16,320</td>
<td>90</td>
<td>1,020</td>
<td>3,130</td>
<td>360</td>
<td>11,390</td>
<td>0</td>
<td>330</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Crop pollination</strong></td>
<td>9,720</td>
<td>9,720</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>Nature-based recreation</strong></td>
<td>50,400</td>
<td>80</td>
<td>4,070</td>
<td>7,480</td>
<td>3,100</td>
<td>30,720</td>
<td>1,350</td>
<td>2,300</td>
<td>1,020</td>
<td>280</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>125,930</td>
<td>190</td>
<td>35,520</td>
<td>11,460</td>
<td>3,480</td>
<td>69,980</td>
<td>1,370</td>
<td>2,630</td>
<td>1,020</td>
<td>280</td>
</tr>
<tr>
<td><strong>Value in EUR/km²</strong></td>
<td>28,740</td>
<td></td>
<td>880</td>
<td>22,090</td>
<td>22,610</td>
<td>19,250</td>
<td>44,010</td>
<td>23,410</td>
<td>26,890</td>
<td>9,320</td>
</tr>
</tbody>
</table>

NA: not assessed

Values rounded to the nearest tens

56,370 euro/km² of green urban area
Trends for ecosystem services

- Crop provision (26%)
- Crop pollination (3%)
- Flood control (2%)
- Timber provision (0%)
- Global climate regulation (1%)
- Nature-based recreation (11%)

Graph showing trends from 2000 to 2012 with Million euro on the y-axis and years on the x-axis.
Níveis de legenda – conforme escala em tela (zoom)
Water stress – Water Security Index (Brazilian Water Security Plan)


Source: ANA
LINKING PRIVATE AND PUBLIC SECTOR NCA APPROACHES
The need

- Public sector
  - Macro level accounts depend on business level data
  - Corporate sustainability accounting and reporting support SDGs and SDG monitoring (12.6.1 and beyond)

- Private sector
  - Lack of ready access to robust data for businesses
  - Data gaps – impacts and dependencies, spatial and temporal data at relevant scales, data that is fit for purpose

- Alignment and shared approaches are possible
Potential benefits

• Alignment of national and corporate sustainability will:
  > Reduce the **reporting burden** for businesses by aligning business surveys with corporate reporting on the environment
  > **Streamline** the process of using business-level statistics in the production of national SEEA accounts and **improve quality**
  > Provide a set of **common definitions** and concepts so businesses can use statistical products efficiently
Links with business accounting

- Business surveys
- Structural business statistics
- Benchmarking
- Sector-specific statistics

and more
Advancements by the statistical community

- Information on flows (pressures, benefits) vs. information on stocks and issues of condition
- Standardization of definitions, classifications
- Benchmarks and reference levels
- Data sources and their scope
- Tools (remote sensing)
- Methodology (e.g. valuation)
Alignment issues

• Substance:
  > Reporting units (enterprise / establishment)
  > Scope (upstream / downstream / supply chain / value chain)
  > Concepts and definitions
  > Principles for disclosure (materiality vs thresholds)
  > Data

• Complex landscape
  > Public sector—sustainability and the environment are more and more cross-cutting
  > Private sector—multiple organizations and initiatives for standards, reporting, frameworks
THANK YOU

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